

Form 1449 (Modified)
Information Disclosure
Statement By Applicant
(Use Several Sheets if Necessary)

Atty Docket No.
SRI1P035/US-4237-2
Applicant:
Kornbluh, et al..
Filing Date
January 16, 2002

Application No.:
10/053,511
Group
2834

RECEIVED
JUL 31 2002
TECHNOLOGY CENTER

U.S. Patent Documents

Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
	A						
	B						
	C						
	D						

Foreign Patent or Published Foreign Patent Application

Examiner Initial	No.	Document No.	Publication Date	Country or Patent Office	Class	Sub-class	Translation	
							Yes	No
	J							
	K							
	L							

Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
MB	O	Roy D. Kornbluh, "Robotic Systems, Ocean Engineering and Marine Systems, 2000 Program, January 2001, Office of Naval Research Public Release, ONR-32100-1
	P	Roy D. Kornbluh, "Robotic Systems, Ocean Engineering and Marine Systems, 1999 Program, February 2000, Office of Naval Research Public Release, ONR 32100-2
	Q	Roy D. Kornbluh, "Robotic Systems, Ocean Engineering and Marine Systems, 1998 Program, February 1999 Office of Naval Research Public Release, ONR 32199-4
	R	Roy D. Kornbluh, Robotic Systems, Ocean Engineering and Marine Systems 1997 Program, December 1997, Office of Naval Research Public Release, ONR 32198-2
Examiner	MARA O. BUDD PRIMARY EXAMINER	
		Date Considered 9-10-04

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

BEST AVAILABLE COPY

Form 1449 (Modified)

Information Disclosure Statement By Applicant

(Use Several Sheets if Necessary)

Patty Docket No. **SRI1P035**

Applicant: **Kornbluh, et al.**

Filing Date **January 16, 2002**

Application No.: **10/053,511**

Group **2838**

U.S. PATENT & TRADEMARK OFFICE
MAY 06 2002

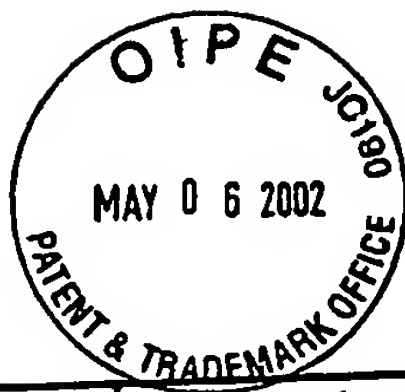
U.S. Patent Documents

Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
<i>W</i>	A1	5,977,685	11/02/99	Kurita, et al.		—	06/03/96
	A2	6,060,811	05/09/00	Fox, et al.		—	07/25/97
	A3	6,249,076	06/19/01	Madden, et al.		—	04/14/99
	A4	4,885,783	12/05/89	Whitehead, et al.		—	04/10/87

Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
<i>W</i>	B1	Ashley, S., "Smart Skis and Other Adaptive Structures", <i>Mechanical Engineering</i> , November 1995, pp. 77-81
	B2	Bar-Cohen, Yoseph, JPL, <i>Worldwide Electroactive Polymers, EAP (Artificial Muscles) Newsletter</i> , Vol. 3, No.1, June 2001
	B3	Bharti, V., H. S. Xu, G. Shanthi, and Q. M. Zhang, "Polarization and Structural Properties of High Energy Electron Irradiated Poly(vinylidene fluoride-trifluoroethylene) Copolymer Films," to be published in <i>J. Appl. Phys.</i> (2000).
	B4	Bobbio, S., M Kellam, B. Dudley, S. Goodwin Johansson, S. Jones, J. Jacobson, F. Tranjan, and T. DuBois, "Integrated Force Arrays," in Proc. IEEE Micro ElectroMechanical Systems Workshop, Fort Lauderdale, Florida February 1993.
	B5	Calvert, P. and Z. Liu, "Electrically stimulated bilayer hydrogels as muscles," Proceedings of the SPIE International Symposium on Smart Structures and Materials: Electro-Active Polymer Actuators and Devices, March 1-2, 1999, Newport Beach, California, USA, pp. 236-241.
Examiner	MARK U. BUDD PRIMARY EXAMINER	
		Date Considered 9-10-04

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.



Form 1449 (Modified) Information Disclosure Statement By Applicant (Use Several Sheets if Necessary)	Atty Docket No. SRI1P035	Application No.: 10/053,511
	Applicant: Kornbluh, et al.	Group 2838
	Filing Date January 16, 2002	

Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
MP	C1	Elhami, K., and B. Gauthier-Manuel, "Electrostriction Of The Copolymer Of Vinylidene-Fluoride And Trifluoroethylene," <i>J. Appl. Phys.</i> Vol. 77 (8), 3987-3990, April 15, 1995.
	C2	Hirose, S., Biologically Inspired Robots: Snake-like Locomotors and Manipulators, " <i>Development of the ACM as a Manipulator</i> ", Oxford University Press, New York, 1993, pp.170-172.
	C3	Kornbluh, R., G. Andeen, and J. Eckerle, "Artificial Muscle: The Next Generation of Robotic Actuators," presented at the Fourth World Conference on Robotics Research, SME Paper M591-331, Pittsburgh, PA, September 17-19, 1991.
	C4	Kornbluh, R., R. Pelrine, J. Joseph, "Elastomeric Dielectric Artificial Muscle Actuators for Small Robots," <i>Proceedings of the Third IASTED International Conference on Robotics and Manufacturing</i> , June 14-16, 1995, Cancun, Mexico.
	C5	Kornbluh, R., Pelrine, R., Eckerle, J., Joseph, J., "Electrostrictive Polymer Artificial Muscle Actuators", IEEE International Conference on Robotics and Automation, Leuven, Belgium, 1998
	C6	Kornbluh, R., R. Pelrine, Jose Joseph, Richard Heydt, Qibing Pei, Seiki Chiba, 1999. "High-Field Electrostriction Of Elastomeric Polymer Dielectrics For Actuation", Proceedings of the SPIE International Symposium on Smart Structures and Materials: Electro-Active Polymer Actuators and Devices, March 1-2, 1999, Newport Beach, California, USA. pp. 149-161.
	C7	Kornbluh, R. D and R. E. Pelrine., "Kornbluh, R., R. Pelrine, Q. Pei, S. Oh, and J. Joseph, 2000. "Ultrahigh Strain Response of Field-Actuated Elastomeric Polymers," Proceedings of the 7 th SPIE Symposium on Smart Structures and Materials-Electroactive Polymers and Devices (EAPAD) Conference, March 6-8, 2000, Newport Beach, California, USA, pp. 51-64
Examiner	Date Considered	
MARK J. BOUD PRIMARY EXAMINER	9-10-04	

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.



Form 1449 (Modified) Information Disclosure Statement By Applicant (Use Several Sheets if Necessary)	Atty Docket No. SRI1P035	Application No.: 10/053,511
	Applicant: Kornbluh, et al.	Group 2838
	Filing Date January 16, 2002	

Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
MA	D1	Liu, C., Y. Bar-Cohen, and S. Leary, "Electro-statically stricted polymers (ESSP)," Proceedings of the SPIE International Symposium on Smart Structures and Materials: Electro-Active Polymer Actuators and Devices, March 1-2, 1999, Newport Beach, California, USA., pp. 186-190.
	D2	Ohara, K., M. Hennecke, and J. Fuhrmann, "Electrostriction of polymethylmethacrylates," <i>Colloid & Polymer Sci.</i> Vol 280, 164-168 (1982).
	D3	Pei <i>et al.</i> , "Improved Electroactive Polymers", U.S. Patent Application No. 09/619,847, filed July 20, 2000, 70 pages
	D4	Pelrine, R., R. Kornbluh, and Q. Pei. "Electroactive Polymer Transducers And Actuators", U.S. Patent Application No. 09/620,025, filed July 20, 2001, 58 pages.
	D5	Pelrine, R. and Kornbluh, "Electroactive Polymer Devices," U.S. Patent Application No. 09/619,846, filed July 20, 2000, 69 pages
	D6	Pelrine, R, R. Kornbluh, J. Joseph, and S. Chiba, "Electrostriction of Polymer Films for Microactuators," <i>Proc. IEEE Tenth Annual International Workshop on Micro Electro Mechanical Systems</i> , Nagoya, Japan, January 26-30, 1997, pp. 238-243.
	D7	Pelrine, R., R. Kornbluh, and J. Eckerle. "Energy Efficient Electroactive Polymers and Electroactive Polymer Devices", U.S. Patent Application No. 09/779,373, filed February 7, 2001.
Examiner	MARK Q. BUDD PRIMARY EXAMINER ART UNIT 2.9	
	Date Considered 9-10-04	

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.



Form 1449 (Modified) Information Disclosure Statement By Applicant (Use Several Sheets if Necessary)	Atty Docket No. SRI1P035	Application No.: 10/053,511
	Applicant: Kornbluh, et al.	
	Filing Date: January 16, 2002	Group: 2838

Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
MB	E1	Pelrine, R., R. Kornbluh, and J. Joseph, FY 1998 <i>Final Report on Artificial Muscle for Small Robots</i> , ITAD-3482-FR-99-36, SRI International, Menlo Park, California, 1999
	E2	Pelrine, R., R. Kornbluh, and J. Joseph, FY 1999 <i>Final Report on Artificial Muscle for Small Robots</i> , ITAD-10162-FR-00-27, SRI International, Menlo Park, California, 2000
	E3	Pelrine, R., R. Kornbluh, Q. Pei, and J. Joseph, "High Speed Electrically Actuated Elastomers with Over 100% Strain," <i>Science</i> , Vol. 287, No. 5454, pages 1-21, 2000
	E4	Pelrine, R., Roy Kornbluh, Jose Joseph, Qibing Pei, Seiki Chiba "Recent Progress in Artificial Muscle Micro Actuators," , SRI International, Tokyo, 1999 MIT/NEEDOIMNIC, 1999
	E5	Pelrine, R., J. Eckerle, and S. Chiba, "Review of Artificial Muscle Approaches," invited paper, in <i>Proc. Third International Symposium on Micro Machine and Human Science</i> , Nagoya, Japan, October 14-16, 1992
	E6	Smela, E., O. Inganäs, and I. Lundström, "Controlled Folding of Micrometer-size Structures," <i>Science</i> , Vol. 268, pp. 1735-1738 (23 June 1995).
	E7	Uchino, K. 1986. "Electrostrictive Actuators: Materials and Applications," <i>Ceramic Bulletin</i> , 65(4), pp. 647-652, 1986
	E8	Pelrine <i>et al.</i> , "Electroactive Polymer Generators", U.S. Patent Application No. 09/619,848, filed July 20, 2000, 69 pages
	E9	Pelrine, R., R. Kornbluh, J. Eckerle "Monolithic Electroactive Polymers" U.S. Patent Application No. 09/779,203 filed February 7, 2001
V	E10	Kornbluh, R., R. Pelrine, Q. Pei and J. Eckerle "Electroactive Polymer Sensors", U.S. Patent Application No. 10/007,705, filed December 6, 2001.
Examiner	MARK O. BUDD PRIMARY EXAMINER	
	Date Considered	9-10-04

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.



Form 1449 (Modified) Information Disclosure Statement By Applicant (Use Several Sheets if Necessary)	Atty Docket No. SRI1P035	Application No.: 10/053,511
	Applicant: Kornbluh, et al.	
	Filing Date January 16, 2002	Group 2838

Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
JP	F1	Pelrine, R. R. Kornbluh, J. Eckerle, S. Stanford, S. Oh and P. Garcia, "Biologically Powered Electroactive Polymer Generators", U.S. Patent Application No. 09/792,877, filed February 23, 2001
	F2	Lakes, R.S., "Extreme damping in compliant composites with a negative stiffness phase", Philosophical Magazine Letters, 81, 95-100 (2001)
	F3	Lakes, R.S., "Extreme Damping in Composite materials with a negative stiffness phase", Physical Review Letters 86, 2897-2900, 26 March (2001).
	F4	Lakes, R.S., Lee, T., Bersie, A., and Wang Y.C., "Extreme damping in composite materials with negative stiffness inclusions", Nature, 410,565-567 March (2001).
	F5	Pei, Qibing, R. Pelrine, R. Kornbluh, S. Jonasdottir, V. Shastri, R. Full, "Multifunctional Electroelastomers: Electroactive Polymers Combining Structural, Actuating, and Sensing Functions, ITAD-433-PA-00-123, available at www.sri.com-publications , January 17, 2001.
	F6	Kornbluh, R., R. Pelrine, Q. Pei and V. Shastri "Electroactive Polymer (EAP) Actuators as Artificial Muscles - Reality, Potential and Challenges", Chapter 16, available from SPIE Press on May 2001.
Examiner	MARK C. HADD	Date Considered 9-10-04
	PRIMARY EXAMINER	
	APT UNIT 212	

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ BLACK BORDERS
- ☐ IMAGE CUT OFF AT TOP, BOTTOM OR SIDES
- ☐ FADED TEXT OR DRAWING
- ☐ BLURRED OR ILLEGIBLE TEXT OR DRAWING
- ☐ SKEWED/SLANTED IMAGES
- ☐ COLOR OR BLACK AND WHITE PHOTOGRAPHS
- ☐ GRAY SCALE DOCUMENTS
- ☐ LINES OR MARKS ON ORIGINAL DOCUMENT
- ☐ REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY
- ☒ OTHER: Black spots

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.